

Serial No. 09/530,653
Atty. Doc. No. 97P8646US

accurately claims the subject matter of the invention and are definite. Therefore, applicants respectfully request the rejection be withdrawn.

Claims 6-12 and 17 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite due to the phrases "additional oxides." Applicants have amended claims 6 and 18 (applicants believe the examiner meant original claim 18 not 17 since the terms "additional oxides" did not appear in claim 17) to include the group of additional oxides MgO, ZrO₂, and HfO₂. Support for these oxides can be found on Page 8, lines 17-19 of the conformed copy of the specification as filed. Thus, applicants respectfully request this rejection be withdrawn.

Response To Rejections Under Section 102:

Claims 1-7, 9-22 stand rejected under 35 U.S.C. §§ 102(e) and/or 102(b), the Examiner contending that these claims are anticipated by Beele (6,127,048), Hasz, et al. (5,914,189, 5,773,141, 5,660,885), Miyata (5,629,251), Lee, et al. (5,466,280), Friese, et al. (5,310,575), Gigliotti, et al. (3,995,616), Pareek, et al. (5,520,751), Druschitz, et al. (5,037,070), General Electric (EP 608 081), or Norton (GB 745,257). Applicant have amended the claims 1, 4 and 16 to include addition language, as discussed below.

Applicants have add terms to claim the thermal barrier coat as follows; "the ceramic thermal barrier coating has an inner region adjacent the bond coat and an outer region facing away from the bond coat, and the inner region of the ceramic thermal barrier coating has a spinel according to the structural formula AB₂X₄ and/or B(AB)₂X₄." Support for this amended can be found on Pages 6 - 8, 10, and 11. Applicant would also like to note that the present claims as amended are substantially the same as those allowed by the European Patent Office (EP 1 029 115 B1) having the same prior art of record.

Serial No. 09/530,653
Atty. Doc. No. 97P8646US

The thermal barrier coating of the present claimed invention is one layer 4, having two regions an outer region facing away from the bond coat and the inner region facing the bond coat having the claimed spinel. Applicant respectfully submits that all the cited art of record does not discloses or teaches a single thermal barrier coating having two regions with the inner region being the spinel as claimed in the newly amended claims. Thus the claims as amended overcome the rejections.

As stated in applicant previous response, the cited art does not disclose admixing one or more oxides to the spinel, and does not disclose the particular spinel compositions in a thermal barrier coating having two regions, as recited in the amended claims. Moreover, Applicants believe that many of the spinels disclosed in the cited art do not possess, inherently or otherwise, the relatively high thermal expansion coefficient and low thermal conductivity necessary to inhibit sintering that Applicants' claimed spinels possess, and that it would not have been obvious to modify these spinels to achieve these properties.

For the foregoing reasons, Applicants respectfully request that the Examiner withdraw the Section 102 rejections.

CONCLUSION

Applicant respectfully requests that the objections and rejections set forth in the outstanding Office Action are withdrawn in light of the above amendments to the claims and discussion. Accordingly, Applicants respectfully request that the Examiner reconsider the objections and rejections and timely pass the application to allowance.

The undersigned has made a good faith effort to respond to all of the objections and rejections in the application and to place the claims in condition for allowance. Should the

Serial No. 09/530,653
Atty. Doc. No. 97P8646US

Examiner have any questions concerning this paper or application, or if any undeveloped issues or questions remain, the Examiner is respectfully requested to contact Applicants' undersigned attorney to resolve such issue or question. All written correspondence should continue to be directed to our below-listed address.

Please grant any extensions of time required to enter this paper. The commissioner is hereby authorized to charge any appropriate fees due in connection with this paper or credit any overpayments to Deposit Account No. 19-2179.

Respectfully submitted,

Dated: May 28, 2002

By: 

Daniel J Staudt
Registration No. 34,733
(407) 736-2415

Siemens Corporation
Intellectual Property Department
186 Wood Avenue South
Iselin, New Jersey 08830

Certification of Transmission under 37 CFR 1.8

I hereby certify that this document is being transmitted to the Patent and Trademark Office on May 28, 2002 to A. A. Turner Primary Examiner of Group Art Unit: 1700 at Fax Number 703-872-9310.


Daniel J. Staudt

Serial No. 09/530,653
Atty. Doc. No. 97P8646US

VERSION WITH MARKINGS TO SHOW CHANGES MADE
(PAGES 7 - 8)

IN THE CLAIMS:

Claims 1,4, 6 and 18 have been amended as follows:

1. (Twice Amended) An article of manufacture that can be exposed to a hot gas [and] including a metallic base body, [having] a bond coat and a ceramic thermal barrier coating bonded thereto, wherein the bond coat is disposed between the metallic body and the ceramic thermal barrier coating, and the ceramic thermal barrier coating has an inner region adjacent the bond coat and an outer region facing away from the bond coat, and [which] -the inner region of the ceramic thermal barrier coating has a spinel of the structural formula AB_2X_4 and/or $B(AB)_2X_4$, where

- X represents an element or several elements of the group comprising oxygen [aluminum], sulfur, selenium, and tellurium,

- A represents an element or several elements of the group comprising aluminum, manganese, iron, cobalt, nickel, copper, zinc, cadmium, silicon, titanium and tungsten, and

- B represents an element or several elements of the group comprising aluminum, magnesium, manganese, iron, vanadium, chromium, gallium, silicon, titanium sodium, and potassium

[excluding the spinels of the structural formula $FeCr_2O_4$, $FeAl_2O_4$, $FeFe_2O_4$, $NiAl_2O_4$ and $NiCr_2O_4$].

4. (Twice Amended) An article of manufacture that can be exposed to a hot gas, having a metallic base body, a bond coat and [with] a ceramic thermal barrier coating bonded thereto wherein the bond coat is disposed between the metallic body and the ceramic thermal

Serial No. 09/530,653
Atty. Doc. No. 97P8646US

barrier coating, and the ceramic thermal barrier coating has an inner region adjacent the bond coat and an outer region facing away from the bond coat, and the inner region of the ceramic thermal barrier coating [which] has a spinel according to the structural formula AB_2X_4 and/or $B(AB)_2X_4$ characterized in that B represents aluminum (aluminate spinel) or chromium (chromium spinel), A represents magnesium, and X represents oxygen.

6. (Three Times Amended) The article of manufacture as claimed in Claim 2, characterized in that the mixed oxide system with the spinel has an additional oxide or several additional oxides admixed to the spinel of the group comprising of MgO , ZrO_2 , and HfO_2 .

16. (Twice Amended) A method of manufacturing a thermal barrier coating on a gas turbine component with a metallic base body, and a bond coat wherein the thermal barrier coating has an inner region adjacent the bond coat and an outer region facing away from the bond coat, and the inner region of the thermal barrier coating has a pre-reacted spinel of the structural formula AB_2X_4 and/or $B(AB)_2X_4$ [excluding the spinels of the structural formula $FeCr_2O_4$, $FeAl_2O_4$, $FeFe_2O_4$, $NiAl_2O_4$ and $NiCr_2O_4$] being [is] applied by means of plasma spraying or vapor deposition such that the spinel containing inner region is formed.

18. (Twice Amended) The article of manufacture as claimed in Claim 1, characterized in that the mixed oxide system with the spinel has an additional oxide or several additional oxides admixed to the spinel of the group comprising of MgO , ZrO_2 , and HfO_2 .